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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/702,095	11/05/2003	Brian T. Donovan	LIGH1110-1	6814
38396	7590	02/08/2007	EXAMINER	
JOHN BRUCKNER, P.C.			HINES, ANNE M	
P.O. BOX 490			ART UNIT	
FLAGSTAFF, AZ 86002			PAPER NUMBER	
			2879	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/08/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<p align="center"><b>Office Action Summary</b></p>	<p>Application No.</p> <p align="center">10/702,095</p>	<p>Applicant(s)</p> <p align="center">DONOVAN ET AL.</p>	
	<p>Examiner</p> <p align="center">Anne M. Hines</p>	<p>Art Unit</p> <p align="center">2879</p>	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 October 2006.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-11 and 16 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br/> Paper No(s)/Mail Date <u>8/17/04</u>.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)<br/> Paper No(s)/Mail Date. _____</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application</p> <p>6) <input type="checkbox"/> Other: _____</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## **DETAILED ACTION**

### ***Response to Amendment***

The amendment filed on October 7, 2006, has been entered and acknowledged by the Examiner.

Claims 1-11 and 16 are pending in the instant application.

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the requirement wherein 'the gas plasma is located between the integrated circuit and the optically and electronically conductive layer' must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

Art Unit: 2879

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claim 8 is objected to because of the following informalities: In claim 8, a 'electronically conductive layer' appears twice. This appears to be typographical error since 'electronically conductive' is not a material property. It appears that an 'electrically conductive layer' is intended. The claim has been treated on its merits assuming this correction. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 7, 9, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Shoji et al. (US 6683418).

Art Unit: 2879

Regarding claim 1, Shoji discloses a method, comprising emitting an optical signal from a gas plasma that is RF inductively coupled to an integrated circuit including a gas plasma discharge device having an inductive coil (Fig. 2; Column 1, lines 8-35; Column 3, line 23 to Column 4, line 8), wherein emitting includes magnetically energizing the inductive coil with the integrated circuit to induce a discharge from the gas plasma (Column 1, lines 8-35).

Regarding claim 2, Shoji further discloses wherein the integrated circuit includes an oscillator and magnetically energizing the inductive coil with the integrated circuit to induce a discharge from the gas plasma (Column 1, lines 8-35; Column 3, line 23 to Column 4, line 8).

Regarding claim 3, Shoji further discloses modulating data using at least one pulse width modulation technique selected from the group consisting of pulse position modulation, and pulse width modulation, wherein emitting is controlled at least in part by pulse modulated data (Column 3, line 23 to Column 4, line 8; Fig. 6a-6c; Fig. 8; Column 5, lines 34-41; Column 7, line 33 to Column 8, line 34).

Regarding claim 4, Shoji further discloses capacitively energizing at least one member selected from the group consisting of a first capacitive coupling plate and a second capacitive coupling plate with the integrated circuit to facilitate the discharge from the gas plasma (Fig. 2, 43; Column 4, lines 9-13).

Regarding claim 5, Shoji further discloses wherein magnetically energizing the inductive coil includes the use of a differential drive to increase power (Fig. 7; Column 6, line 22 to Column 7, line 32).

Art Unit: 2879

Regarding claim 7, Shoji further discloses applying an RF bias to the gas plasma and maintaining the RF bias to affect switch-on time of the gas plasma (Figs. 6a-6c).

Regarding claim 9, Shoji further discloses refracting the optical signal with an optically conductive layer that is optically coupled to the gas plasma (Column 1, lines 8-21, 'tube').

Regarding claim 16, Shoji further discloses wherein the gas plasma discharge device includes a first capacitive coupling plate and a second capacitive coupling plate (Fig. 2, 43).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji et al. (US 6683418) in view of Lapadula et al. (US 4211834).

Regarding claim 6, Shoji teaches the invention of claim 1, but is silent regarding the method of manufacturing the circuitry of the control system disclosed.

In the same field of endeavor of the process of manufacturing integrated circuits, Lapadula teaches wherein the substrate of an integrated circuit is treated with actinic radiation in order to reduce the size and thereby increase the speed of an integrated circuit through the method of patterning of a resist layer (Column 1, lines 17-49).

Art Unit: 2879

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Shoji to have the circuitry of Shoji formed through the method of Lapadula, including exposing the circuitry to actinic radiation, in order to reduce the size and thereby increase the speed of an integrated circuit through the method of patterning of a resist layer.

Claims 1 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hug et al. (US 4230902) in view of Willett (US 3798568).

Regarding claims 1 and 10, Hug teaches a method comprising emitting an optical signal from a plasma tube (Fig. 3, 34; Column 5, lines 50-51) that is coupled to an integrated circuit (Fig. 3, 46; Column 5, line 54) including a gas plasma discharge device, and further comprising wherein the optical signal is diffracted with an acousto-optic crystal that is optically coupled to the gas plasma (Fig. 3, 52; Column 5, lines 59-60). Hug is silent regarding the structure of the electrodes of the plasma tube.

In the same field of endeavor, Willett teaches a plasma tube (Fig. 1; Abstract) with an inductive coil (Fig. 1, 26; Column 2, line 42) wherein emitting includes magnetically energizing the inductive coil to induce a discharge from the gas plasma (Column 1, line 65 to Column 2, line 4) in order to form a laser that eliminates electrodes and thereby prevent contamination of the plasma (Column 2, line 66 to Column 3, line 2).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Hug to have the plasma tube laser of Willett including a plasma tube

Art Unit: 2879

with an inductive coil whereby emitting includes magnetically energizing the inductive coil to induce a discharge from the gas plasma in order to form a laser that eliminates electrodes and thereby prevent contamination of the plasma, as disclosed by Willett.

Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abshire (US 4600299) in view of Silfvast et al. (US 4388720).

Regarding claims 1 and 11, Abshire teaches a method comprising emitting an optical signal from a gas plasma laser with a resonant cavity coupled to an integrated circuit including a gas plasma discharge device (Fig. 1, 12 & 20; Abstract) including broadcasting modulated data to a plurality of optical detectors (Fig. 1, 28 & 52; Abstract). Abshire is silent regarding the electrode structure of the gas plasma laser.

In the same field of endeavor, Silfvast teaches a gas plasma laser with a resonant cavity wherein the gas plasma laser has an inductive coil and emitting includes magnetically energizing the inductive coil with the integrated circuit to induce a discharge from the gas plasma (Fig. 8; Column 5, lines 13-25) in order to provide a laser that has a high power and can provide immediate laser output (Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Abshire to have the gas plasma laser with a resonant cavity of Silfvast including wherein the gas plasma laser has an inductive coil and emitting includes magnetically energizing the inductive coil with the integrated circuit to induce a discharge from the gas plasma in order to provide a laser that has a high power and can provide immediate laser output, as disclosed by Silfvast.



Art Unit: 2879

***Allowable Subject Matter***

Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne M. Hines whose telephone number is (571) 272-2285. The examiner can normally be reached on Monday through Friday from 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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